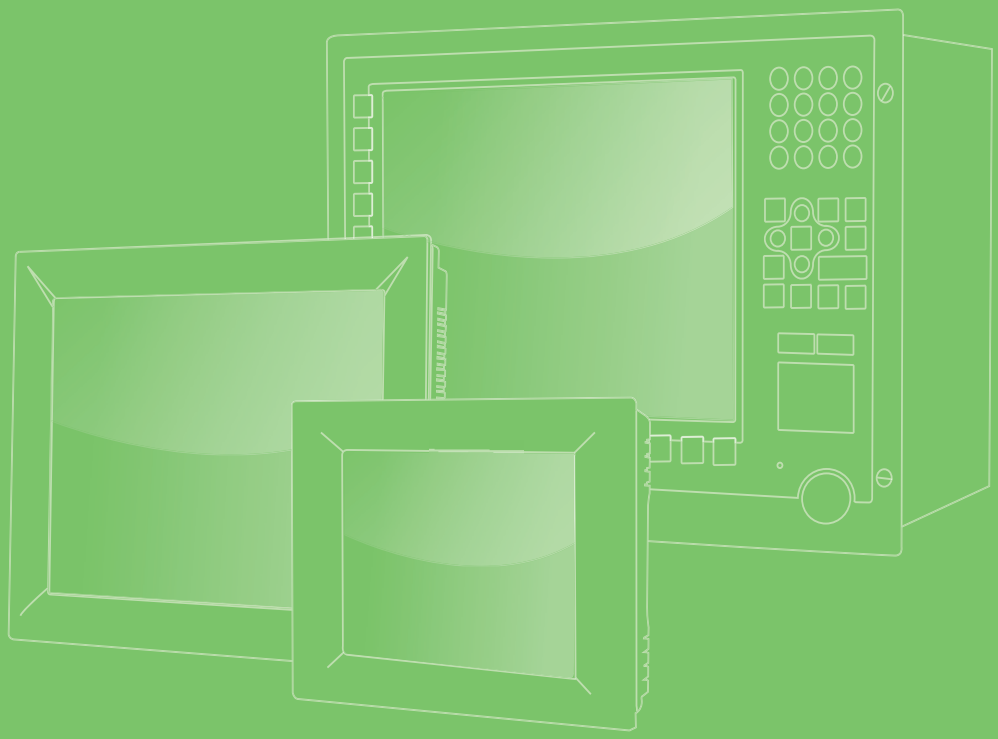

User Manual

# TPC-8100TR

## 10.4" EN50155 Railway Panel Computer

ADVANTECH
eAutomation

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This Manual Covers the Following Models:

- TPC-8100TR

Part No. Edition 1

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# Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

# Declaration of Conformity

### CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

### FCC Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

# Technical Support and Assistance

1. Visit the Advantech web site at http://support.advantech.com where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

# Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.

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# Chapter 1

## General Information

## 1.1 Introduction

The TPC-8100TR is designed for railway applications with EN50155 compliance. The TPC-8100TR includes an all around IP65 waterproof design with rugged die-cast mechanical front and rear cover.EN50155 compliance power module support wide DC voltage input and 10 ms hold up time (EN50155/S2).

## 1.2 Packing List

- 1 x TPC Driver DVD
- 1 x Registration and Warranty Card
- 1 x Simplified Chinese Manual

## 1.3 Specifications

### 1.3.1 System Kernel

- **CPU:** Intel Cedar Trail Dual core processor 1.6G
- **System Chipset:** Intel Atom N2600
- **Memory:** 4GB SO-DIMM DDR3 SDRAM
- **OS support:** WES 7/ WES 2009 / Windows CE 7.0 / Linux
- **Storage:** Built in 16G CFast card
- **LED**: Power LED x1, Status LED controlled by GPIO.
- **Cooling System:** Fanless design
- **Dimensions (W x H x D):** 345x227x85mm (13.6"x8.9"x3.4")
- **Enclosure Front bezel:** Die-cast Aluminium alloy Back housing: Die-cast Aluminium alloy
- **Mounting:** Panel Mount / VESA Mount

### 1.3.2 I/O Ports

- 2 x RS-232(connection:M12 A-coding, 8-pin male)
- 2 x422/485(with isolation, connection:M12 A-coding, 8-pin male)
- 2 x USB2.0 (connection:M12 A-coding, 8-pin female)
- 2 x 100/1000 Base,(connection:M12 A-coding, 8-pin female)
- 1x Audio (with External Buzzer,Line out, connection:M12 A-coding, 8-pin male)
- 1x Power connector (connection:M12 A-coding, 5-pin male)

### 1.3.3 Safety and Environment

**Safety**

- FCC Class A
- CE certificated
- All around IP65

**Environment**

- **Operating Temperature:**
  - -30 ~ 70°C (-22 ~ 158°F)
- **Storage Temperature:**
  - -30 ~ 70°C (-22 ~ 158°F)
- **Humidity:** 40°C @ 10~95% relative humidity (non-condensing)
- **Vibration:** IEC 61373 Railway– Shock and Vibration

## 1.4 LCD Specifications

| | |
|---|---|
| **Display Type** | TFT LED LCD |
| **Size (diagonal)** | 10.4" |
| **Maximum Resolution (Pixels)** | 800x600 (SVGA) |
| **Number of Colors** | 16.2M |
| **Viewing Angle** | 160/140 |
| **Luminance ($^{cd / m2}$)** | 400 |
| **Contrast Ratio** | 700:1 |
| **Backlight Adjustment** | Through software |

***Note!*** *There might be several bright or dark pixels on the LCD. This phenomenon is normal in today's LCD manufacturing.*

## 1.5 Touchscreen Specifications

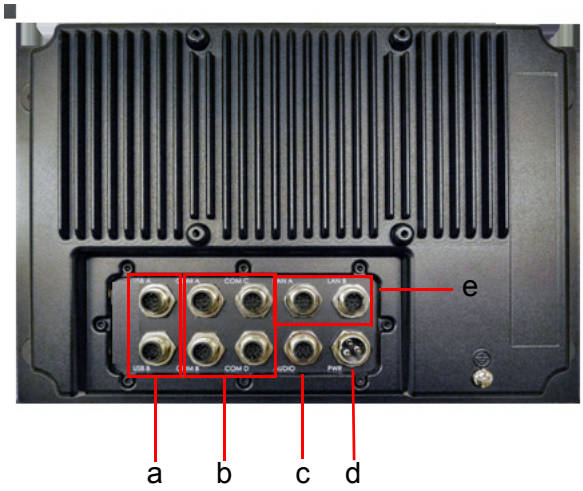
- **Touch Type:** Resistive
- **Base Glass Construction:** Tempered glass
- **Controller:** RS-232 Interface
- **Type**: 5-wire, analog resistive

## 1.6 Power

- **Input Voltage:**
  - Typical - $72V_{DC}$ to $110V_{DC}$
- **Power Consumption:** 35W Typical

## 1.7 I/O Ports Arrangement

The arrangement of the I/O ports is shown in Figure 1.1.




| | |
|---|---|
| a.USB 2.0 x2 | d. Power x1 |
| b. COM x 4 | e. LAN x2 |
| c. Audio x1 | |

## 1.8 Dimensions and Cutout

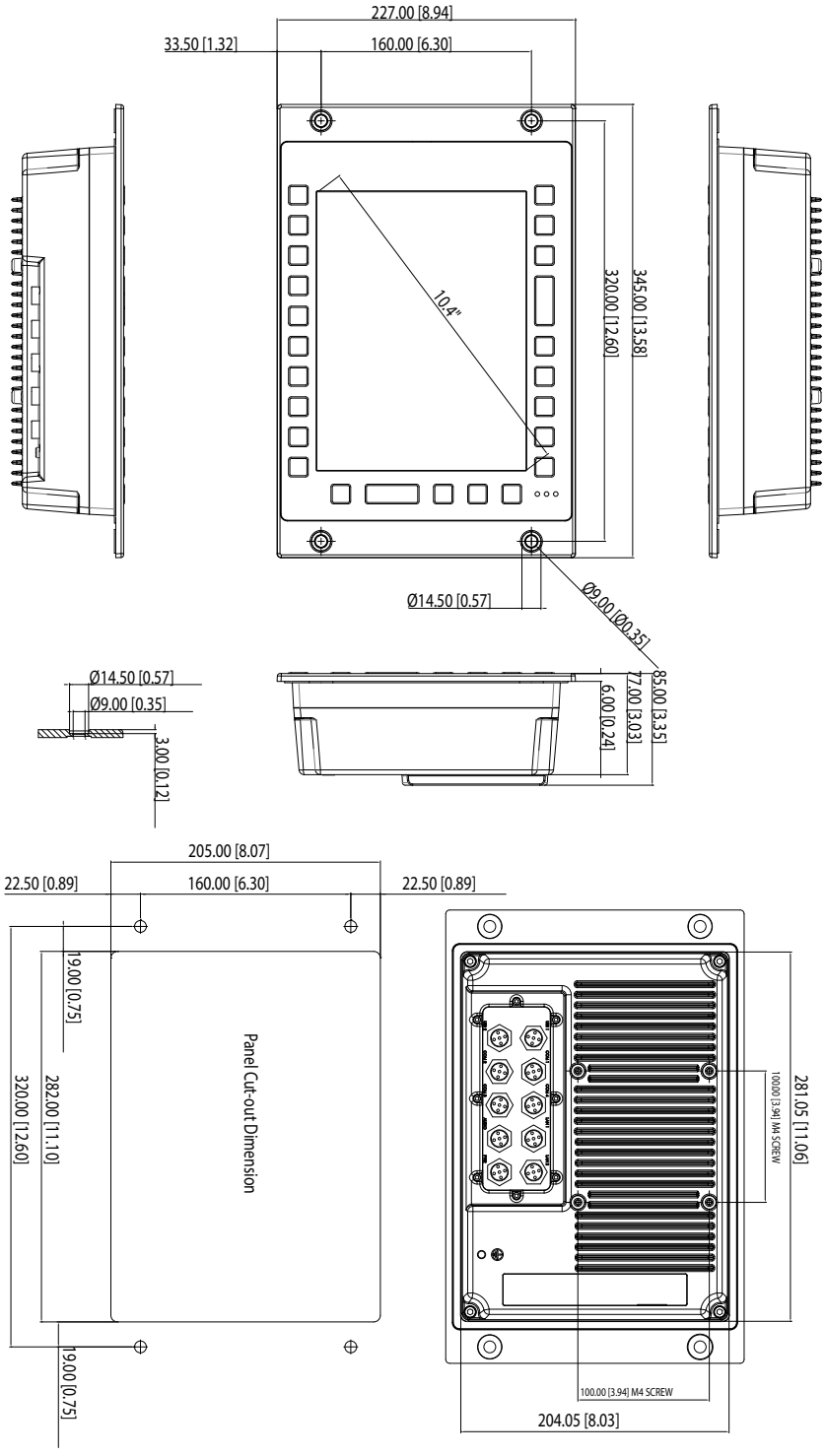
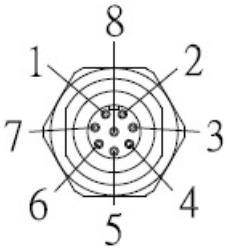



**Figure 1.1 TPC-1800TR Dimensions**

# Appendix A

## Interfaces Pin assignment

# A.1 Pin Assignment

| LAN | Pin number | Define | (Female) |
|---|---|---|---|
| M12-A-8P-F LAN | 1 | TX_D1+ |  |
| | 2 | TX_D1- | |
| | 3 | RX_D2+ | |
| | 4 | BI_D3+ | |
| | 5 | BI_D3- | |
| | 6 | RX_D2- | |
| | 7 | BI_D4+ | |
| | 8 | BI_D4- | |

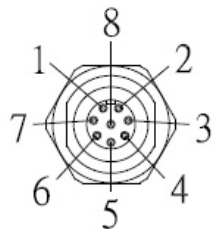


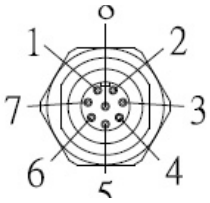
| RS232 | Pin number | Define | (Male) |
|---|---|---|---|
| M12-A-8P-M RS-232 | 1 | CD | |
| | 2 | RXD | |
| | 3 | TXD | |
| | 4 | DTR | |
| | 5 | GND | |
| | 6 | DSR | |
| | 7 | RTS | |
| | 8 | CTS | |



| RS-422/485 | Pin number | Define | (Male) |
|---|---|---|---|
| M12-A-8P-M RS-422/485 | 1 | TX- / D- | |
| | 2 | TX+ / D+ | |
| | 3 | RX+ | |
| | 4 | RX- | |
| | 5 | GND | |
| | 6 | Not Used | |
| | 7 | RX- (with terminal) | |
| | 8 | TX- / D- (with terminal) | |



| USB | Pin number | Define | (Female) |
|---|---|---|---|
| M12-A-8P-F USB | 1 | Vcc |  |
| | 6 | D- | |
| | 3 | D+ | |
| | 5 | Vss | |
| | 8 | Shielding | |

| Audio out | Pin number | Define | (Female) |
|---|---|---|---|
| M12-A-8P-F AUDIO | 1 | Speak L+ |  |
| | 2 | Speak L- | |
| | 3 | Speak R+ | |
| | 4 | Speak R- | |
| | 5 | Audio_GND | |
| | 6 | Headphone_L | |
| | 7 | HP-in | |
| | 8 | Headphone_R | |

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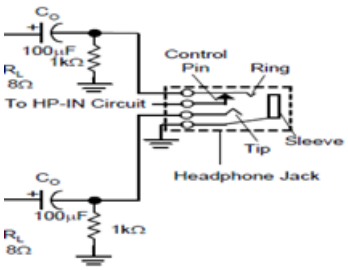



**Figure A.1** Audio / Headphone reference circuit

| DC-in | Pin number | Define | (Male) |
|---|---|---|---|
| M12-A-5P-M Power | 1 | V-,DC 110v | |
| | 2 | V-,DC 110v | |
| | 3 | V+,DC 110v + | |
| | 4 | V+,DC 110v + | |
| | 5 | F_GND | |

# Appendix B

## TPC-8100TR Bezel Key Mapping

# B.1 TPC-8100 Bezel key mapping

The TPC-8100TR Keypanel is used USB keyboard simulation. Keypanel is with following key function and reference key code.

| Image | Key | Key code | | Image | Key | Key code |
|---|---|---|---|---|---|---|
| | F10 | 121 | | | Enter | 13 |
| | F9 | 120 | | | ESC | 27 |
| | F8 | 119 | | | . (dot) | 190 |
| | F7 | 118 | | | 1 | 49 |
| | F6 | 117 | | | 2 | 50 |
| | F5 | 116 | | | 3 | 51 |
| | F4 | 115 | | | 4 | 52 |
| | F3 | 114 | | | 5 | 53 |
| | F2 | 113 | | | 6 | 54 |
| | F1 | 112 | | | 7 | 55 |
| | Delete | 46 | | | 8 | 56 |
| | Up | 38 | | | 9 | 57 |
| | Down | 40 | | | 0 | 48 |

# Appendix C

## EC Driver Installation

# C.1 EC Driver Installation

Advantech EC provides system intelligent control, such as backlight /watchdog /LED GPIO control. Please follow up following step to install ES drivers.

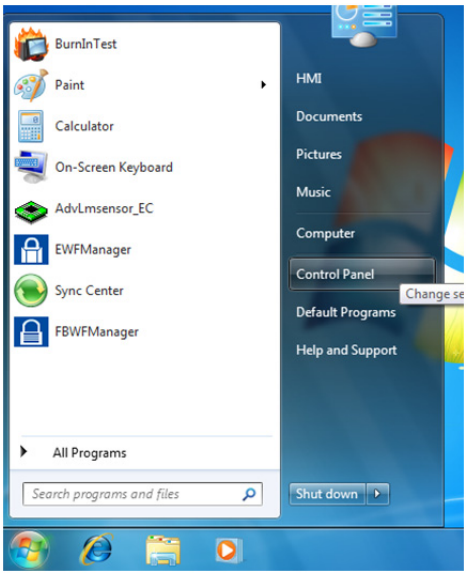
**Step 1:** Install with Advantech EC driver

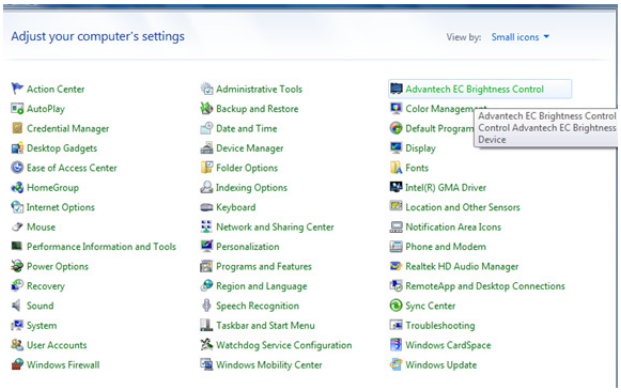
Install with Advantech EC driver package: driver folder in EC WinXP Win7 driver\ AdvEC_V1.01.0001

**Step 2:** Install with Advantech EC_Backlight driver

Install with Advantech EC driver package: driver folder in EC WinXP Win7 driver\AdvECBrightness_V1.00.0001.

Then you can initial the application from Windows control panel as below.

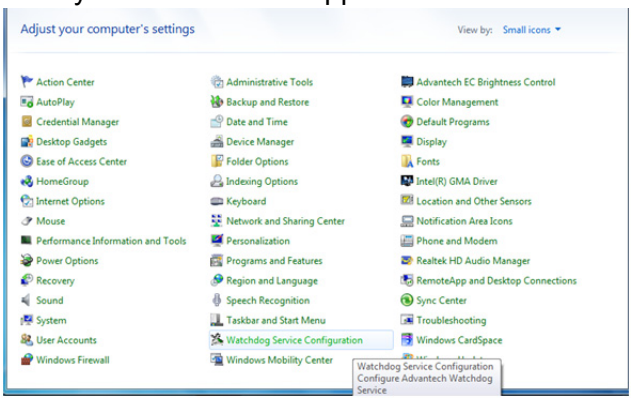


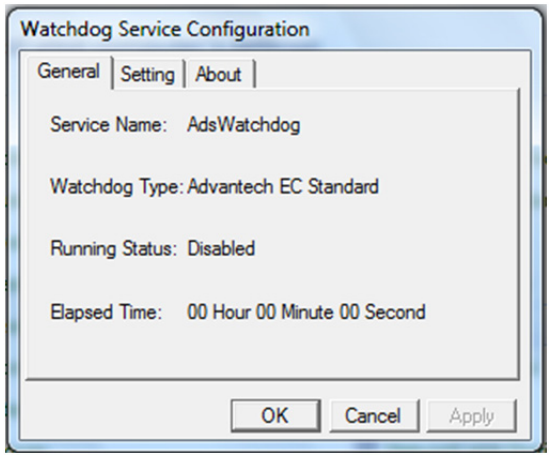



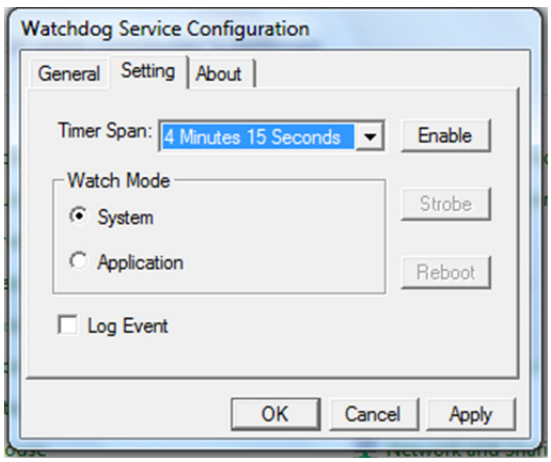
**Step 3:** Install with Advantech EC_watchDOG driver

Install with Advantech EC driver package: driver folder in EC WinXP Win7 driver\ AdvWDT_v1.27.0001s

Then you can initial the application from Windows control panel as below.




**Step 4:** Install with Advantech EC_LEDGPIO driver

Install with Advantech EC driver package: Folder in EC WinXP Win7 driver\Adv-LEDGPIO. Yellow and red LED can controlled by GPIO, sample code please refer to file EC_Gpio_prototype.txt in driver folder: EC WinXP Win7 driver\AdvLEDGPIO.

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# Appendix D

## Front Bezel LED Indication

# D.1 Front Bezel LED Indication

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Front Bezel LED indicator:

The following table summarizes the front bezel LED indication of the device. Install the GPIO driver first through driver folder: EC WinXP Win7 driver\AdvLEDGPIO.
The Yellow and red LEDs can be controlled by GPIO, sample code refer to the file: EC_Gpio_prototype.txt in driver folder: EC WinXP Win7 driver\AdvLEDGPIO.

| LED | Status control by | Remark |
|---|---|---|
| Green LED | System Power up => Green LED on. | |
| Yellow LED | LED status controlled by GPIO | GPIO: Index 6 |
| Red LED | LED status controlled by GPIO | GPIO: Index 5 |

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